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## ABSTRACT

Reported are a series of studies revealing developmental and individual differences among preschool children on relationships between gender-based knowledge, gender constancy, gender schematic processing, recognition memories for gender-typed information, and flexibility, sequencing, and understanding of gender scripts. Alternative approaches for looking at early gender-role development are discussed, and ideas about important issues in contemporary gender-role research are advanced. It is suggested that researchers should stress the amount of gender-based knowledge children might need to make gender typifications. Researchers should also try to understand the salience of the gender dimension to young children and children's use of gender roles to organize and remember social information. An alternative to conventional gender-role knowledge, children's gender script understanding, is discussed. Research findings suggest that children's gender-role knowledge and their sequencing of gender scripts may be unique types of gender-role understanding and knowledge. It is concluded that there appear to be cognitive factors other than gender-role knowledge and gender constancy understanding that significantly affect young children's gender-typing. Forty-nine references are cited. (RH)

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## Gender schematization and gender scripts:

Sometimes a little knowledge can be dangerous<sup>1</sup>

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RUNNING HEAD: GENDER SCHEMA

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## Gender schematization and gender scripts:

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Young children acquire a knowledge and awareness of gender-roles at an early age and this learning takes place at an alarmingly rapid rate (Carter, 1987; Fagot, 1985; Huston, 1983; Katz, 1983; 1986; Weinraub & Brown, 1983). Not surprisingly then, previous theories of gender-role development have concentrated on detailing children's acquisition of gender-role knowledge and gender constancy understanding (viz., Kohlberg, 1966; Kohlberg & Ullian, 1978; Stangor & Ruble, 1987). Presumably as an outgrowth of these earlier approaches, previous investigations frequently envisioned the core concepts of gender-role development in a quantitative, knowledge-based manner (cf., Levy, 1987; Signorella, 1987).

Although these quantitatively-based theories and research have been invaluable in building an empirical base and generating interesting frameworks for studying gender-role development, they have also restricted psychologists' views of early gender-role development. For example, traditional approaches to gender-role development have inquired little about individual differences in the salience and application of the gender dimension by young children (cf., Carter & Levy, 1988; Martin & Halverson, 1987). Also, gender-role researchers know little about how and why younger children who lack significant amounts of gender-role knowledge or gender constancy understanding make sense of their social world via gender-roles (viz., Constantinople, 1979). Last, little is known about the different types of cognitive factors outside of traditional gender-role knowledge or gender constancy that impact young children's early gender-role development (Levy, 1987).

To answer these and other questions, gender-role researchers need to begin to look at gender-role development from new and original perspectives, and to understand gender-role development from a less knowledge-based position. In the

present paper, some alternative approaches for looking at early gender-role development, and suggest some ideas about some important issues in contemporary gender-role research and theory will be presented. First, it will be suggested that in addition to stressing the amount of gender-based knowledge children might need to gender-type, researchers should start to try understanding the salience of the gender dimension to young children and children's use of gender-roles to organize and remember social information. Second, an alternative type of gender-based understanding outside of conventional gender-role knowledge (i.e., children's gender script understanding) which affects early gender-role development will be discussed.

As mentioned, early gender-role approaches focused on children's acquisition of gender-role knowledge and gender constancy understanding. However recent studies have documented that young children lacking a complete understanding of gender constancy or gender-role knowledge demonstrate an awareness of the gender dimension and of gender-relevant information (e.g., Carter, 1987; Carter & Levy, 1988; Kuhn, Nash, & Brucken, 1978; Levy & Carter, 1989; Weinraub, Clemens, Sockloff, Ethridge, Gracely, & Meyers, 1984). What are some of the implications of these findings for understanding early gender-role development?

It appears that sophisticated gender-based knowledge may not be necessary for children to apply the gender dimension as a means to organize and remember social information (Fagot, 1985; Levy, 1987; Martin & Halverson, 1987). Second, children's acquisition of some amount and type of gender-based knowledge might now be viewed as sufficient but not necessary for children to apply the gender dimension in their social information processing (Eisenberg, Murray, & Hite, 1982; Levy, 1987; in press).

Gender-role researchers should recognize that there are different cognitive

aspects of young children's gender-role development. Two aspects of gender-role development might be envisioned as: 1) a knowledge-based component, and 2) a process-based component (Levy, 1987; Martin, 1985; Stangor & Ruble, 1987). Gender-role researchers should begin to distinguish between children's amount of gender-role knowledge and children's use of the gender dimension to organize their world.

With this knowledge versus processing distinction in mind, it can be surmised that simply stating that children acquire gender-based knowledge does not address the question of how and why they attend to and apply the gender dimension over other social categories (Bem, 1981; Roopnarine & Mounts, 1987; Signorella, 1989). Hence, it is critical that to begin to understand not only the developmental paths concerning how much gender-relevant knowledge children acquire, a content question, but to also need to understand when and how such knowledge or awareness is used by children to process social information, a salience or accessibility question (Levy, 1987; Higgins & King, 1981; Ruble & Stangor, 1986).

Contemporary gender-role approaches are now envisioning gender-role development in what we might call a more process-oriented manner (Martin & Halverson, 1987; Signorella, 1987). One can see this in the gender schema models advanced over the last decade or so by Bem (1981; 1984) and Martin and Halverson (1981; 1987; Martin, 1989; also see Markus, Crane, Bernstein, & Siladi, 1987). These models maintain that gender-typing and gender-role development derives largely from a generalized readiness by individuals to encode and organize information along gender lines (Bem, 1981; 1984; Carter & Levy, 1988). Gender schema approaches suggest that studies of children's gender-role development should not only examine children's acquisition of gender-based knowledge (a developmental phenomenon) but should also examine how gender schemas guide children's social

information processing (an individual differences phenomenon) (Levy, in press).

In an attempt to examine some of the relations between preschoolers' gender-based knowledge and gender schematic processing, Carter and Levy (1988; Carter, Levy, & Cappabianca, 1985; Levy & Carter, 1989) developed a response time measure of children's toy preferences which permits an examination of the degree to which children choose particular gender-typed toys based on the gender dimension; that is to measure the salience of the gender dimension to children. This tendency for children to choose toys based on the gender dimension has been termed children's degree of gender schematization (Carter & Levy, 1988; Carter, Levy, & Cappabianca, 1985; Levy & Carter, 1989).

In this gender schematization task, children are presented with a pair of toys and asked to indicate the one toy they most prefer. Children's response latencies and choices are recorded. The logic behind this measure is as follows. High and low gender schematic children's responses to specific pairs of gender-typed toys are assumed to systematically differ. Children whose toy choices are strongly guided by gender-based notions (i.e., highly gender schematic children) should find it difficult to choose between two toys from the same gender-typed category (e.g., two masculine toys) and this difficulty should be manifested in a relatively longer response times. Conversely, highly gender schematic children should find it easier to choose between two toys from different gender-typed categories (e.g., a masculine versus a feminine toy) resulting in relatively shorter response times.

In calculating the salience of the gender dimension to children with this task (i.e. their gender schematization) Carter and Levy are more interested in children's relative response times to certain pairs of toys than children's actual toy choices. Using the distinction made earlier, it might be said that

these researchers are more interested in "process" than "content", although these two components of gender schema are certainly related (Levy, 1987; Martin & Halverson, 1987; Ruble & Stangor, 1986; also see Mandler, 1979; 1984ab).

In a series of studies, Carter and Levy have found that preschoolers' gender schematization and not their amount of gender-based knowledge or gender constancy understanding best predicted preschooler's: 1) accurate memories and selective distortions of gender-typed information (Carter & Levy, 1988), 2) accurate attributions of gender-role stereotypes (Levy & Carter, 1989), and 3) gender-typed toy preferences (Carter & Levy, 1988; Levy & Carter, 1989; Levy, in press). Moreover, these researchers have observed that children's amount of gender-role knowledge and gender constancy understanding are often unrelated to their degree of gender schematization. This is not surprising since gender-role knowledge and gender constancy understanding show strong developmental (age-related) trends, whereas gender schematization does not and is, after all, an individual differences measure (Carter & Levy, 1988; Levy & Carter, 1989; Levy, 1987).

Thus even if a child's amount of gender-based knowledge is small, such a child may and can use the gender dimension to remember and make decisions about gender-relevant information (Levy, 1987). On the other hand, children with a substantial amount of gender-based knowledge may or may not apply gender distinctions in their social information processing (Levy, in press). Hence one reason for the title of this paper; sometimes a little knowledge can be dangerous.

In sum, these results suggest that individual differences in the salience of the gender dimension to children and not necessarily children's amount of gender-based knowledge per se, substantially influences their social information processing. However, one might now begin to speculate about the developmental implications associated with gender schematization. For instance, some research

suggests that younger children's social cognitions may be driven more strongly by gender-role themes than older children's (e.g. Serbin & Sprafkin, 1986). Hence, researchers might ask whether being more or less gender schematic affects younger and older children's processing of gender-typed information comparably.

In a study of preschoolers' recognition memories for gender-typed portrayals, Levy (in press) observed interactions between children's age and gender schematization. A high degree of gender schematization was associated with better memories for gender-typed content by three to four year-old children (see Figure 1). However, the strong influence of the gender schema did not merely serve to augment younger children's accurate memories. Gender schematization was also positively associated with greater amounts of recognition memory distortions by younger children (see Figure 2). Specifically, highly gender schematic, younger children were more likely to erroneously state that they recalled certain gender-role consistent portrayals, when in fact they had really seen gender-role inconsistent ones. On the other hand, gender schematization did not mediate older, five to seven year-old children's accurate memories or memory distortions in such a consistent manner (see Figures 1 & 2).

These results suggest that younger and older children's processing of gender-typed information may be differentially influenced by gender schematization. Consistent with Martin & Halverson's gender schema model, Levy proposed that children's processing of gender-relevant information is mediated by their cognitive abilities and the classification schemes most readily available to them at their developmental level. For younger children this organizing factor may have been the gender schema. On the other hand, older children's advanced cognitive functioning may have permitted them to use more complex, advantageous mnemonic practices, rendering the gender schema less critical. Thus, gender schematiz-

ation may serve different information processing functions at different developmental levels (Levy, 1987; in press; Martin & Halverson, 1987).

It appears then that there are both developmental and individual differences in the salience of gender-roles to young children and the influence of this salience on children's social information processing (Levy, 1987; Ruble & Stangor, 1986). This research suggests that the salience and use of the gender dimension is one important factor affecting young children's social information processing (viz., Signorella, 1987). Most importantly, these data suggest that the gender dimension is strongly affecting the social information processing of three to four year-old children, who lack substantial gender-role knowledge or gender constancy understanding. Again, sometimes a little knowledge may be sufficiently dangerous.

Although individual differences in the salience of the gender dimension to children is one meaningful way to look at early gender-role development, developmentalists are often greatly interested in age-related, developmental phenomena concerning children's gender-typing. One new area of research that may be important in helping us understand early gender-role development, which has revealed hardy developmental changes, is children's gender script understanding (Levy, Boston, & Burlew, 1989).

Script researchers have suggested that young children's script understanding may be the basic building blocks from which more abstract concepts, such as gender-roles, emerge (Fivush, 1987; Mandler, 1984ab; Nelson, 1981; 1983ab; Nelson & Gruendel, 1983). Scripts can be defined as common event sequences which form the basis of daily life (Nelson, 1983). Children's script understanding might be defined as their understanding of the temporal and sequential relations between components of an event (Fivush & Mandler, 1987; Hudson & Nelson, 1983).

Nelson (1981; 1983ab) explains that early concepts of social roles revolve around what young children experience and know about the common events and activities people engage in. Thus, scripts serve as a sort of prototypical, or rudimentary, schema from which more abstract types of social knowledge may emerge (Mandler, 1983; 1984ab; Nelson, 1983ab).

However, script researchers have not specifically examined any interconnections between children's script understanding and their understanding of social roles. Instead, script research has looked at other components of script understanding, such as developmental changes in children's ability to sequence scrambled events into temporally correct order (e.g., Fivush & Mandler, 1987; Hudson & Nelson, 1983; O'Connell & Gerard, 1985; Nelson, 1983ab). This research indicates that children as young as three years of age have well organized event representations (i.e., schemas) for events with which they are familiar. However, though older children are significantly better at sequencing generic scripts, even younger children are quite competent at sequencing familiar events (e.g., Mandler, 1979; 1983; 1984b). This research supports the idea that script understanding is a basic and developmentally early representational system (Mandler, 1983; 1984ab).

Levy, Boston and Burlew (1989) examined relations among children's age, sex, amount of gender-role knowledge and flexibility and sequencing and understanding of gender scripts. Age-related differences in children's use of gender-roles in making additional judgments about gender scripts were also examined. Children completed three primary tasks. First, preschoolers were presented with a scrambled gender script (three masculine; building, barbecuing, mowing, three feminine; cooking, shopping, laundry) and were asked to place the events in their correct temporal order. This task was titled the gender script sequencing task.

Following the sequencing task, the child performed the script succession

judgement task. The interviewer correctly ordered the gender script before the child. The child was then shown two more pictures. One of the pictures showed a person of the sex NOT associated with the gender-role theme of the script, performing an act that would be a temporally consistent follow-up to that script (e.g., in the grocery shopping script, a man was shown carrying two grocery bags). The other picture showed a person whose sex was consistent with the gender-role theme of the script in a more vague, temporally inconsistent follow-up (e.g., in the grocery shopping script, a woman was shown standing by a refrigerator). The child was then asked "Now, which one of these two pictures do you think would come next?" The child indicated which of the two follow-ups he/she felt would follow. Children's amount of gender-role knowledge and flexibility were also assessed using the Sex-Role Learning Index (SERLI; Edelbrock & Sugawara, 1978).

Results supported the majority of predictions. Developmentally it was expected and found that older, five to seven year-old children were more accurate at sequencing gender scripts in their temporally-correct order than younger, three-and-half to five year-old children (see Figure 3). However, consistent with other script research, younger children were also quite competent at ordering gender scripts (Figure 3). Therefore, although strong developmental differences appeared in children's sequencing of gender scripts, this ability seemed quite robust even at an early age.

It was also predicted that children would demonstrate more accurate sequencing of same-sex (own-sex) gender scripts, and results confirmed this prediction (see Figure 4). This result supports Martin and Halverson's (1981; 1987) gender schema model which asserts that children should show an embellished learning of own-sex over other-sex content. The previous finding is fascinating, given that there

was also an overall developmental increase in children's gender script sequencing abilities. Thus, unlike previous script research which has observed ONLY strong age-related increases in children's accuracy at sequencing generic scripts, children's gender script understanding exhibits strong variation at both developmental and individual difference levels.

Predictions regarding children's script succession judgments were also confirmed. Consistent with the age by schematization interaction findings found by Levy, it was expected that younger children would base their script succession judgments more on the gender-role theme of the script, rather than it's temporal nature (also see Serbin & Sprafkin, 1986). This prediction was supported (see Figure 5). Again it appeared that the gender dimension was particularly salient to younger children (Levy, 1987; in press; Serbin & Sprafkin, 1986).

Finally, it was also predicted that relations between children's gender-role knowledge and flexibility and children's script sequencing performances would be weak at best, and results supported this prediction. Children's amount of gender-role knowledge & flexibility did not correlate significantly with their accuracy in sequencing gender scripts.

In sum, these results suggest that children's gender-role knowledge and their sequencing of gender scripts may be somewhat unique types of gender-role understanding/knowledge. It might be that sometimes, a little bit of a particular type (or types) of gender-role knowledge may indeed be sufficient for children to gender-type. Also, consistent with previous gender-role research and theory, the gender dimension again appeared to be particularly salient to younger children.

In sum, it appears there are cognitive factors besides gender-role knowledge and gender constancy understanding that significantly affect young children's gender-typing (Carter, 1989; Huston, 1983; 1985). Researchers should be sensit-

ive to the fact that though important, children's gender-role knowledge and gender constancy understanding are not paramount in understanding early gender-role development (Levy, 1987; Signorella, 1987; 1989). There is probably not any one single decisive cognitive factor or mechanism in early gender-role development, and this makes investigation of gender-role development both fascinating and frustrating. Thus, gender-role researchers should be wary of conceptualizing the importance of individual gender schema factors in an "a" versus "b" manner (Levy, 1987).

In attempting to unravel the cognitive factors in early gender-role development, researchers might do better by dwelling less on quantitative types of questions which ask how much gender-role knowledge a child has. Instead, research might be directed toward asking what kind of gender-role knowledge younger and older children have and when they apply the gender dimension. Gender-role researchers might wish to begin examining early gender-role development in more innovative ways, dwelling less on "content" questions, and more on "process" ones.

In addition, gender-role researchers should be aware that important developmental and individual differences exist in gender-role development. The two cognitive factors presented in the present paper, children's gender schematization and gender script understanding, may be beneficial for our understanding of gender-role development and in fostering new, alternative approaches for conceptualizing gender-role development.

Last, it is important to remember that more than any area in social cognition, gender-role development does not take place in a "cognitive vacuum" (Katz, 1983; 1986; 1987). Future research might be aimed at identifying gender schema variables and examining how these variables interact with social as well as other cognitive factors involved in early gender-role development (Levy, in preparation).

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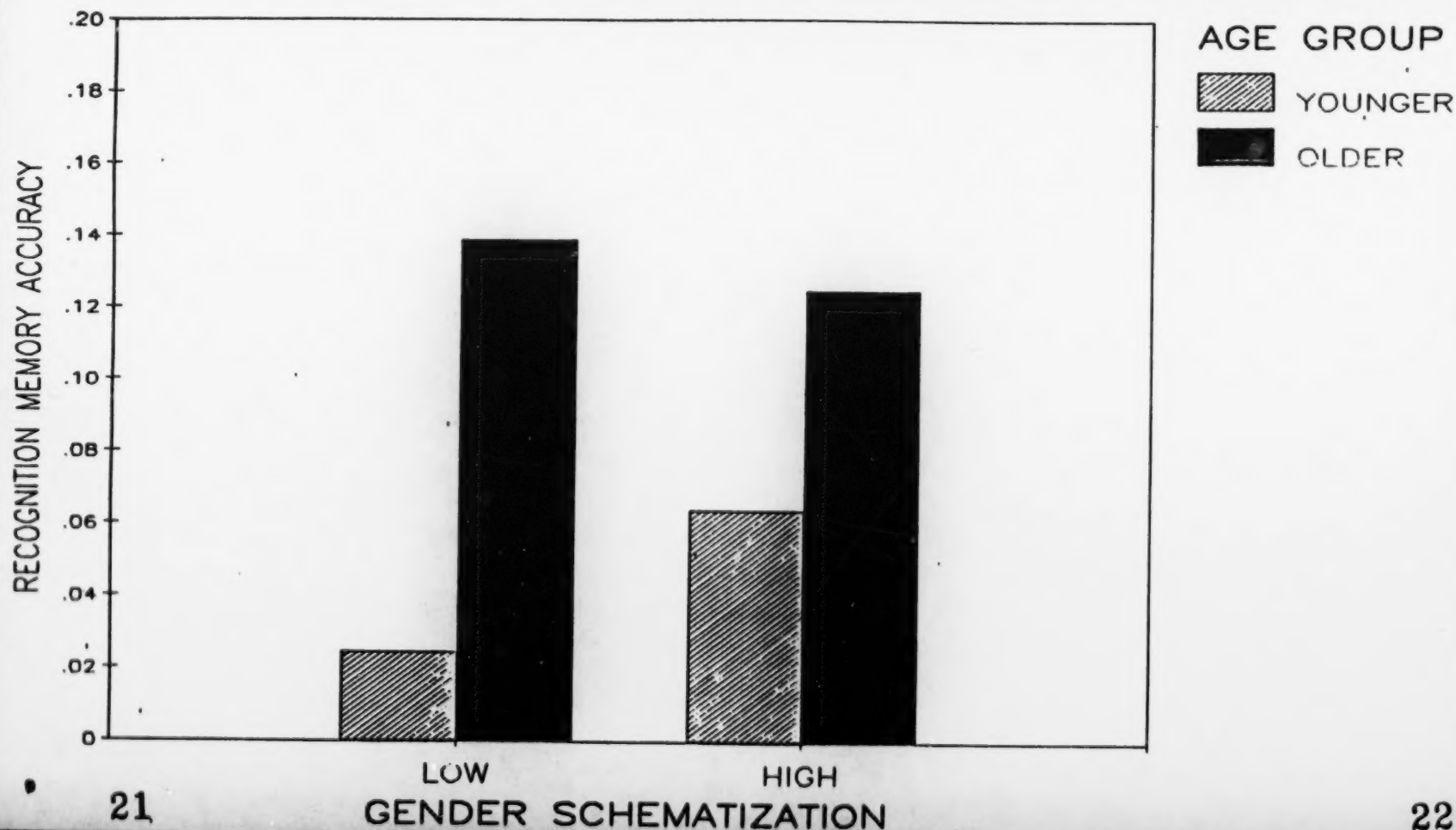
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~~Table~~ 1

Figure

# CHILDREN'S RECOGNITION MEMORY ACCURACIES FOR GENDER-ROLE CONSISTENT PORTRAYALS AS A FUNCTION OF AGE AND GENDER SCHEMATIZATION



~~Table~~ 2  
Figure

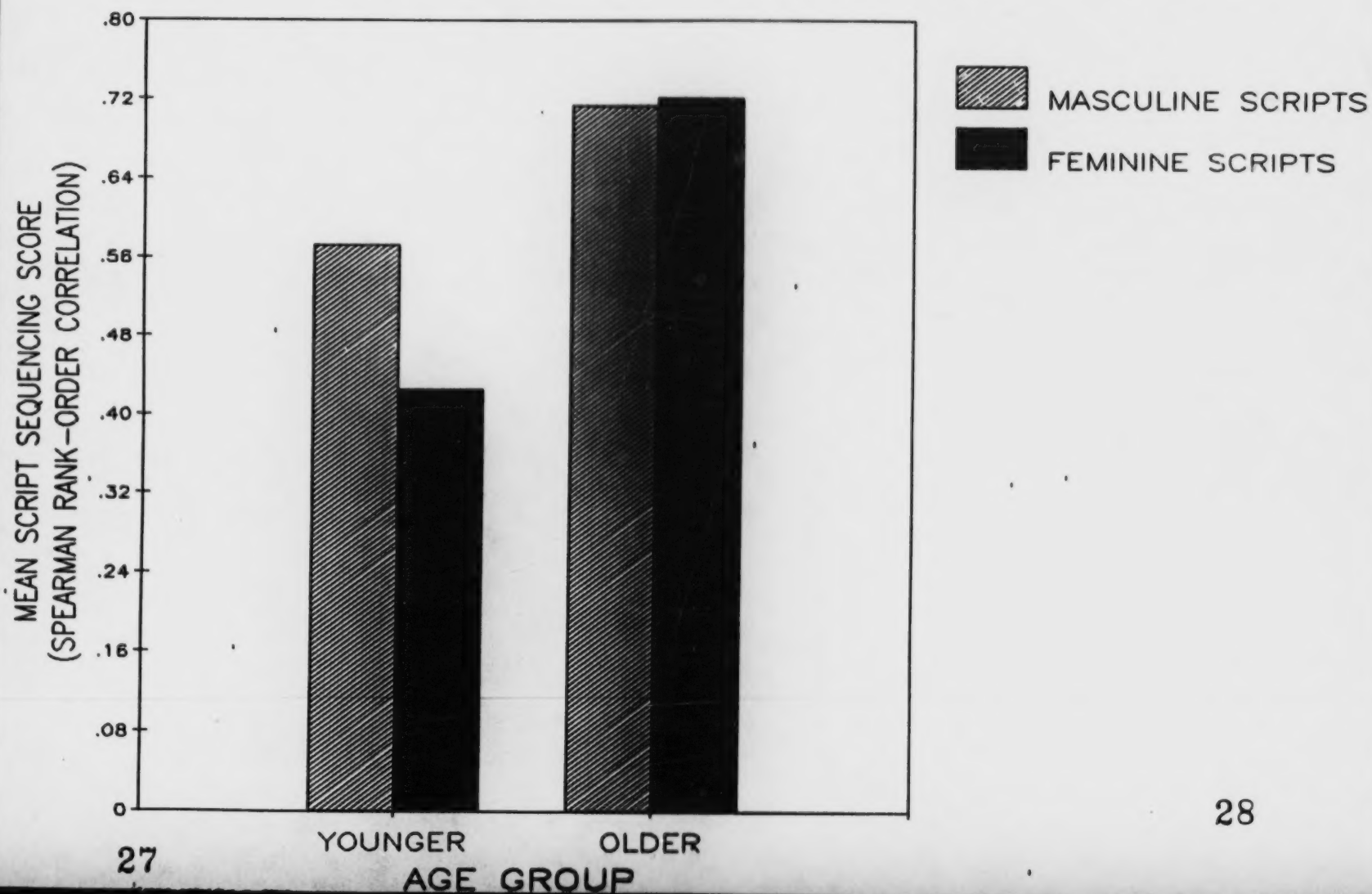
# CHILDREN'S MEMORY TRANSFORMATIONS FROM GENDER-ROLE INCONSISTENT TO CONSISTENT PORTRAYALS AS A FUNCTION OF AGE AND GENDER SCHEMATIZATION



~~TABLE~~ 3

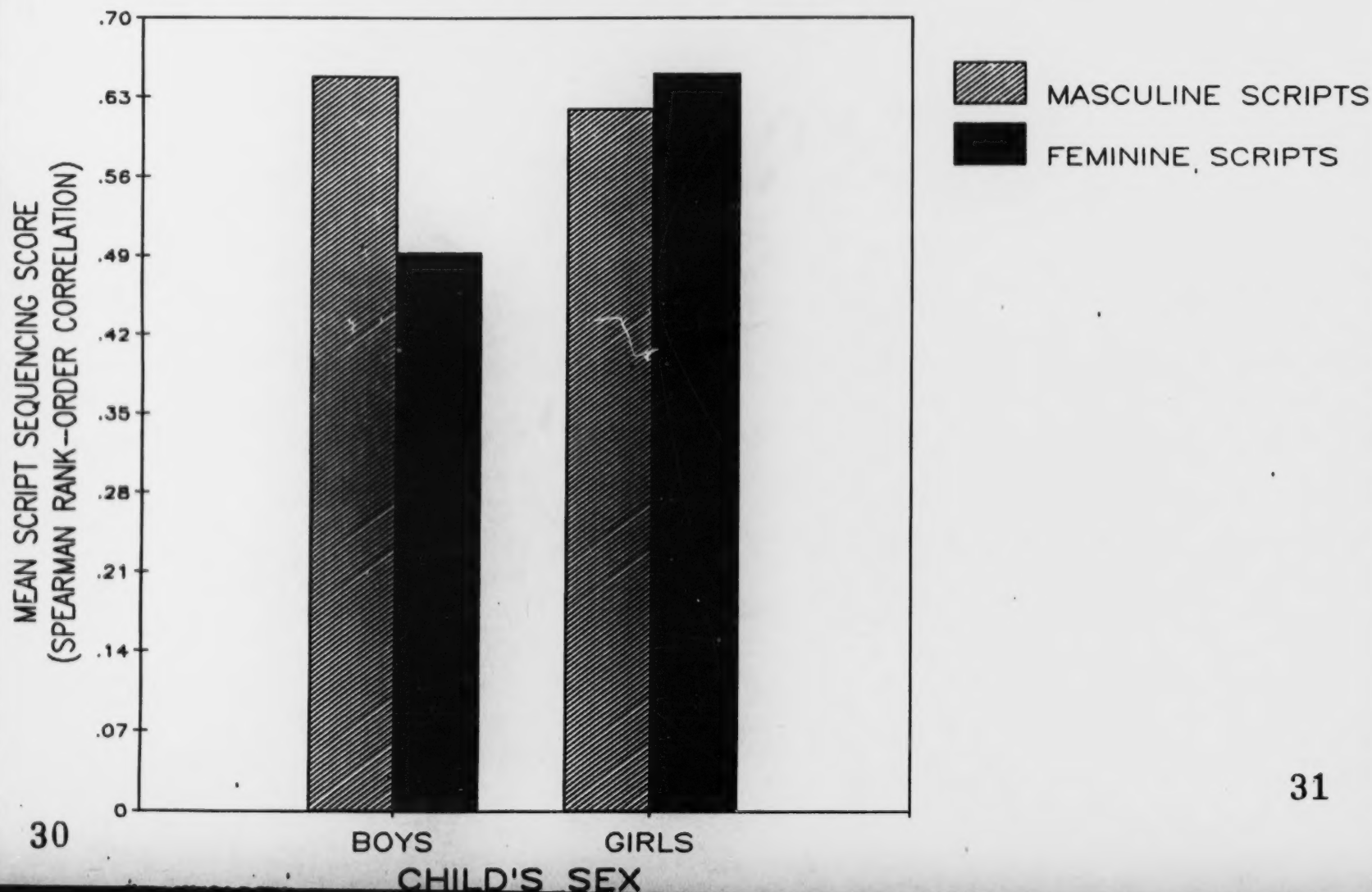
Figure

## MEAN GENDER SCRIPT SEQUENCING SCORES AS A FUNCTION OF CHILDREN'S AGE



~~Figure~~ 4  
Figure

## MEAN GENDER SCRIPT SEQUENCING SCORES AS A FUNCTION OF CHILDREN'S SEX



~~2002~~ 5  
Figure

# MEAN GENDER SCRIPT SUCCESSION SCORES AS A FUNCTION OF CHILDREN'S AGE

